Shipping Sanding Transport

Packing

The scales and a postage meter machine are important equipment in the small but highly efficient four-man shipping room at Seabury Press, Greenwich, Conn. See Complete Story, Page 7.



MAY 1954

HERE ARE 4 NEW DISPENSERS INTRODUCED BY DERBY IN THE PAST YEAR ALONE.



Derby Model BW

A versatile dispenser that quickly dispenses the tough Barrier Wrap mate rials. Models for 6", 12" and 18



Derby Grip-A-Tab Model 81

A pressure sensitive tape dispenser for extra long lengths. Lever operated full



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Fast hand portable filament tage dis-penser for grouping, reinforcing, pal-letizing, securing. Low priced!



Derby Grip-A-Tab Model 851

A medium duty, lever operated dispenser for predetermined lengths from $1\frac{1}{2}$ to $10^{\prime\prime}$ at one stroke, up to $2^{\prime\prime}$

VOW ... Derby does it ... Again

with 2 New Anniversary Models to celebrate 15 Years of Progress



GUMMED TAPE DISPENSER WITH

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Never before has such a fine quality gunmed tape dispenser been designed with such big machine features to sell for such an amezingly low price! It dispenses tape in widths from 1" to 3", and up to 30" lengths. Just look at these hig machine features!

- Exclusive Spring Clutch Feed.
 A. Compact, felds up to be a 2. Derby "Moisture Control System," Single Brush. 5. Automatic Tayle Cut-Ol 3. Interlocking Side Frume Construction.
 S. Visual Measuring Scale

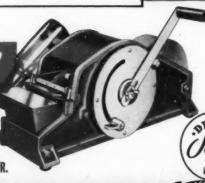
Stainless steel cut-off blade guaranteed for the life of the machine

THE MEDIUM PRICED SUPER

SENSATIONAL DISPENSER DELIVERS PREDETERMINED LENGTHS OF GUMMED TAPE UP TO 30", UP TO 3" WIDTHS!

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WHAT is going to happen in this picture?





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M-J Tanglefoot

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All available plain, colored or imprinted. Standard grade Tanglefoot and Sunrise also available.

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McLAURIN-JONES TAPES

MEN - METHODS - MATERIALS

3



FREE LITERATURE

Each numbered paragraph below describes practical. illustrated literature about the newest developments in shipping room supplies, devices and equipment . . important data every alert, progressive shipping manager should keep filed and available for instant retar ence. It will pay you to read each item carefully, select those that help with your particular shipping problems. Then all you need to do is check and mail the coupon. Shipping Management will see that the material is forwarded with no obligation on your part.



ANNIVERSARY MODELS . . . celebrate 15 years of progress with two brand new, economy minded dispensers. Offering stainless steel cutoff blades with a life of the machine guarantee, these machines will amaze you with the quality of work they perform and at the low cost they make possible. For the sensational FREE details, just check No. 1.

SEALS FASTER . . . the first time down. Super standard sealing tape will close cartons and packages as fast as operators hands move. Users report as much as 25% greater output - no rerubbing, no resealing. For FREE trial roll of tape and FREE copy of booklet on cutting costs in your shipping room, put a check next to No. 2.

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HANDY WALL CHART . . . Contains new postage rates and all other available information about current postal rates. The 4th Class Rates are the new ones as of October 1, 1953. FREE. Check 4.

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5/54

FAST TAGGING . . . of your shipments, and quick attachment of linings to shipping crates with this remarkable, fast working one-hand tacker. FREE BOOK-LET with the whole story. Check 10.

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LOWER LABELING COSTS . . . Cut costs by more than 30%, no adjustments needed for various size labels; control adhesion with this label paster to minimize waste. For complete FREE details, check 14.

SHIPPING DEPT. EQUIPMENT . cil machines, of course, and all the accessories to go with it: stencil ink, fountain brushes, fountain markers, tape dispensing machines. FREE INFO, check 15

PROTECT DAMAGEABLE ITEMS . . . with low cost protective cushion pillow. Soft as a blanket-comes in single sheet cushion for protection against vibration or shock or in single sheet cushion with strip laminated, strong kraft outer sheet for exterior packing. You can obtain absolutely FREE ILLUSTRATED BOOKLET, just check 16.

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SHIPPING MANAGEMENT

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Your Title or Position Name Company Address City State Check HELPS By Number PLEXIBLE CORRUGATED . . . wrapping paper. Faster, more economical and time-saving answer to packaging problems. Extra weight gives added strength and overall protection. Gives greater resistance to shock. Full information FREE for the asking 18.

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ANSWERS YOUR SHIPPING & TRAFFIC HEADACHES... the new, 1954 Better Shipping Manual contains information and data on hundreds of subjects. Articles on military packaging, containers, sealing, etc. are up-to-the minute. For FULLY FREE information, simply check No. 23.

It's All Yours!!

A uranium mine of money-saving information and ideas is yours by just filling out the coupon.

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Packing A Punch.. By S. H.

NE of the phenomenons of the industrial world since the end of World War II has been the enormous growth of packaging conventions and expositions. In fact, one of these, the American Management Association Show, has become one of the greatest industrial expositions in the nation in a few short years.

This year the AMA exhibits occu-

This year the AMA exhibits occupied every square foot of the huge Atlantic City Convention Hall and the basement below it. This was the first time that every square foot had been occupied. It is a rare show that can perform such a feat in the \$15,000,000 New Jersey Hall. In sheer numbers the booths exceeded any of any previous AMA Show.

Naturally a new Atlantic City attendance record was set by AMA with over 24,000 clocked as having entered by 3 p.m. Thursday, April 8th, date of the ending of the show.

Of more significance from the viewpoint of shipping and packing managers, traffic managers and package engineers was the fact that many more of the participating exhibitors repre-sented the fields of industrial packaging, shipping, outer containers, preservative wraps, sealing, marking, mailing and weighing than ever before. In short, shipping and packing departments were well represented, as is attested to by the large number of stafftaken photographs shown in this month's issue. If the AMA Show has grown, the proportionate growth in the type of exhibitor advertising in Shipping Management has been even greater. Only a few years ago perhaps a handful of the Packaging Show exhibitors (Continued on Page 23)

Photo of the Month

Heavy-duty parcel post scales and a postage meter machine which prints, on a moistened, gummed tape, any required postage, simplify and speed up daily shipping in a four-man operation at Seabury Press. Greenwich, Conn.

The Post-O-Meter which weighs packages up to 70 pounds for postage by zones, and the Model RS mailing machine which ejects up to \$9.99½ on a single stamp — are supplemented by the Model S-103 precision scale for smaller packages up to three pounds. Pitney-Bowes, Inc., manufacturers these products.

Seabury Press also uses its shipping room postage meter each day for business letter mail. Electrically operated, it automatically feeds, stamps, seals and stacks 175 letters a minute. Its built-in unit for parcel post provides postage in any denomination on special tape at the touch of a lever. On easy-to-read registers, the machine shows postage used and on hand.



MAY, 1954

VOL. 19, No. 5

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ALFRED ZEFF News Editor

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Here's a story about

time that's worth more than the product shipped, the salaries of the men working, plus the cost of shipping.

Here's a story about

a firm that grew big because of the ability of modern transportation methods to deliver the goods **on time**.

Here's a story about

modern speed, efficiency and coordination, resulting in a magnificent shipping operation to 500 points at once!

First of a New Series:

Shipping Department Efficiency Exclusive in SHIPPING MANAGEMENT Beginning Next Month, June 1954.

Shipping MANAGEMENT

FOR SHIPPING AND TRAFFIC EXECUTIVES 425 FOURTH AVENUE, NEW YORK 16, N. Y.

MAY, 1954 VOLUME 19 NUMBER 5

High Military Expenditures Call For Packaging Economy

By COL. R. L. MASON, USAF Chief, Packaging Branch Air Material Command

The National Security Industrial Association serves as a link between American Industry and the Defense Department. It seeks to provide for that agency responsible for our Nation's security an access to America's pool of industrial know-how.

NSIA is supported by over 600 companies, employing more than one-third of the nation's manufacturing laboring force. The Association's method of operation is simple. Government defense agencies can present problems to any one of 13 standing Advisory Committees which cover fields ranging from Packaging to Procurement. Individual problems are acted upon by Task Committees which work under the Advisory Committee. Membership on the Committees is open to the best qualified men. regardless of whether or not they are NSIA Members.

In addition to the material on these pages, further technical discussions by the Association can be found in the 1954 edition of BETTER SHIPPING MANUAL — off the press this month

Two CHALLENGES have been presented to the military packager—first, to do the job well enough to stand up under the extremes of the elements and of manhandling, and second, to be sure the individual item is well preserved so it will be ready for use when and wherever in the world it is needed. Man, time and the elements impose harsh and difficult demands—demands that must be met if our forces are to be militarily effective.

The military's answer to these challenges is, one: research and development; two: general and detailed specifications and instructions covering how to pack military material; three: training of supervisors and foremen and of mechanics and green hands; and four: assistance from Industry.

In the course of our continuing efforts to insure that the equipment we buy today is ready tomorrow—and time in this instance is purely relative—ready for use, we are confronted with another equally disconcerting challenge—Is the present method of pack the best that can be engineered?

Need Skill To Modernize

As if building to withstand the hazards of movement and of mother nature were not enough to tax our capabilities, we are called on for an even higher degree of skill to modernize—to streamline our methods. Modernize to prevent

overpacking—and overpack we do. The natural tendency and the line of least resistance is wrap it once, wrap it again and then for good measure, add another wrap. Sheer force of numbers should withstand all hazards. Pack everything in anticipation of a train wreck and you'll suffer no losses.

The basic principles of economics, however, dictate that we overhaul this extravagant practice. The philosophy of swaddling an egg in a mattress is on its way out but there's a long, long road ahead before we can sit back and say our overall packaging system is both adequate and properly engineered. One can't help wishing that he could buy military equipment in the raw—with no wrapping. Come

Fibre material, die cut to fit the engine part being packaged is used in packing for the Air Force. The result is a package practically damage free, packed in a minimum of time for maximum effective-

Photo Courtesy Brettcore Div., McDonough-Lydon Mfg. Co.



to think of it, though, there's practically nothing we buy or use that comes without a container of some sort—soft drinks or hard Fquor come in the bottle, the peanut in its shell, honey in its wax, and ammunition with its grains of powder in a metallic shell.

Three Billion For Packaging

The Defense budget includes a little-publicized item of some 3 billion odd dollars for packaging—a staggering amount in any man's language. It is included in the total procurement moneys appropriated by the Congress. Any increase in packing cost obviously means a proportionate reduction in the number of things we can buy—any decrease in packing costs means more actual weapons for the same dollar. Our emphasis must be on cutting packaging cost to the bone—even a 5% reduction means an added 150 million dollars will be available for military material.

Modernization, streamlining, better engineering is the order of the day. Reduce the dollar cost of packing to a minimum, cut its weight, eliminate unnecessary cube and still save the equipment. Recognize the various means of transportation, be ready to switch from surface to air and vice versa on a moments notice. Air shipments require less protection and what's more the economies of air shipment depend upon and demand the elimination of heavy boxes, dunnage and of excessive cube. Surface shipments, too, depend for economies, on streamlined packing that provides our equipment only enough protection and no more, to withstand the hazards of movements.

Unified Effort Needed

The services, need the help of the gentlemen who are Industry. There is insufficient engineering know-how in the Services to solve all the knotty problems as quickly as the principles of good management and economies dictate. The ultimate in good packaging cannot be achieved over night, but its attainment cannot wait for the military to do it alone. What we need—and it is important that we have it now—is

One of the new materials successfully being used for military preservation packaging is lightweight molded foam rubber. The material shown below is used in cans for precision instruments and fragile objects with low "G" factor. Each of this type insert is covered with a greaseproof coating which eliminates the need for grade "A" wrapping and taping.

-Photo Courtesy Greenwood Packaging Supply Co.



a coordinated, unified all out effort, taking full advantage of the assets available in Industry and the Military—the talent, the ingenuity, the experience, the know-how, the equipment, the will-to-do.

Many similar innovations have been designed by Industry for our family of modern, economical and efficient packages. Each represents more fighting power per dollar—each contributes to improving the military posture of the Services.

These results have been so gratifying, so productive of economics that we are duty bound to the nation and to the taxpayer to explore every possible avenue of expanding this industry—military packaging alliance to make it industry-wide in scope. Some industries have been more active than others in this activity—and its probably our fault that there hasn't been 100% support by all because we failed to ask for help.

Peelable Plastics Used For Scratchless Cushioning

By CHESTER H. PENNING, Assistant Sales Manager, Eastman Chemical Products, Inc.

THE OUTSTANDING APPLICATION of peelable plastics in cushioning is for the protection of turbine blades and other highly critical parts for the Air Force. The slightest scratch on these precision pieces is cause for rejection. The transparent butyrate coating completely protects them and at the same time permits a reading of the data on the blades so that full identification is possible without unpacking and with no possibility of mislabeling.

In coating the blades a single dip is used, the blades being suspended by a string which can be arranged to act as a rip cord for removal of the coating when the part is to be used. The cord is tied on the piece in such manner that when dipping the thinnest edge is down so that the drainage from the part will build up the coating there. If the thin edge were at the top the coating would drain away from it and not provide the desired protection.

The use of butyrate peelable plastic as dunnage has been approved by the Aviation Supply Office. It appears on ANA Bulletin No. 302a as a material and code for dunnage and wrapping. (This is the Air Force-Navy Aeronautical Standard Preservation and Packaging Card.) Mr. William H. Britton of the Aviation Gas Turbine Division of Westinghouse reports that the Aviation Supply Office now requires that the individual blade weights be shown on the unit containers of all spare blades. The blades must be segregated into groups. This necessitates a great deal of additional handling of these highly precisioned parts before they are finally packed into their unit containers. Without the protection afforded by the plastic prior to this segregation, a far more costly and time-consuming method would have to be devised.

Protect Precision Parts

One outstanding possibility for peelable plastics is the packing of precision bearings, many of which now are packed in glass vials. One thought is to use thinner glass for the vials and coat the vials with butyrate peelable plastic for protection against breakage. More promising, however, with saving in both weight and cost, is the use of Kodapak containers coated with butyrate peelable plastic. These containers can be made by fabricating the sheet stock or by drawing sheet to form. The containers are very light in weight compared with glass and of course not fragile. It might be thought that the Kodapak container alone would be satisfactory, but an overcoating of butyrate peelable plastic provides a seal and also additional strength and cushioning, making an almost foolproof package, with no additional dunnage required.

Excerpts from a paper given at the Joint Industry Conference on Cushioning in Packing, Sponsored by Materials Management Center, Wayne University, and General Motors Preservation-Packing Committee, December 7 and 8, 1958.

24,000 Visitors Set Mark At AMA's Atlantic City Show

Are you here? Candid shot by convention photographers shows part of the huge crowd patiently waiting for Convention Hall doors to open in the morning. The four day show was marked by the throngs of visitors who jammed aisles and display booths to see what the industry will be offering in 1954.



VER 24.000 VISITORS thronged through the corridors of Atlantic City's huge Convention Hall last month to view the brand new - and the successful packaging products on display at the 23rd National Packaging Exposition of the American Management Association. This year's show was the largest from the aspect of display of new developments in packaging materials, designs, equipment and services; and set an attendance record for Atlantic City packaging shows. Some 360 exhibitors utilized a display area of approximately 130,000 square feet in bringing the latest show before the eyes of industry.

Eleven hundred packaging executives registered for the three-day A.M.A. Packaging Conference, held at Convention Hall in conjunction with the exposition. Twenty-five speakers discussed trends in the industry and presented case studies of company practices in specific areas of packaging.

Growth Reflects Industry Trend

Both conference speakers and representatives of exhibiting companies offered evidence that the steady growth of the annual packaging exposition reflects a similar trend in its industry, one of the fastest-growing in the nation. Despite talk of recession elsewhere, almost every branch of packaging is still expanding in production, sales, and technical advance.

Plastic packages, for example, are doing better than a \$300-million-a-year business in their own right, R. C. Evans, director of marketing for the Plastics Division of Monsanto Chemical Company, reported. Foreseeing no sign of a let-up in the demand for plastics as containers or wrappers, he estimated that approximately 525 million pounds of plastics--in the form of

molded materials, flexible and rigid films, and coatings --would be produced for packaging in 1954. The greatest part of this production will be cellophane and plastic coatings, with styrene, phenolics, and polyethylene swelling the total.

Vacuum-Formed Method

The vacuum-forming method, among the most recent developments in plastics, is already a major factor in plastic film packaging, according to Edward W. Ward, general sales manager of the Plastics Division of Celanese Corporation of America. Present demand for vacuum-formed packages exceeds production capacity.

Polyethylene is being widely used for foods, textiles, and even nuts and bolts. About 600 million square yards of polyethylene film were used for packaging in 1953, according to T. W. Sharp, manager, Flexible Packaging Division, Bakelite Company. This year production is expected to double as expanded facilities of Monsanto, Bakelite, and other producers go into production.

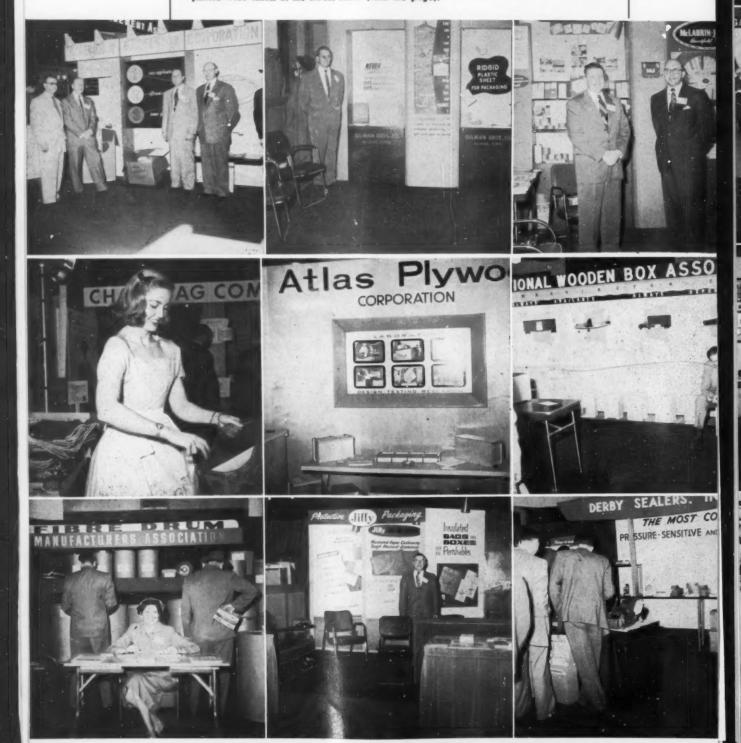
Polyethylene Use Grows

Since polyethylene combines readily with other materials, it is being used increasingly in laminatons with other films, foil, paper, and fabric. A new film made of polyethylene-coated cellophane was shown at the exposition. Called Polycel, it is made by the H. P. Smith Paper Company, which says that it combines the transparency, sparkle, and printing properties of cellophane with the toughness, high seal strength, and durability of polyethylene.

(Continued on Page 22)

Seen In The Booths At The AMA Show

Strolling casually through the huge Packaging Show in April, staff photographers for SHIPPING MANAGEMENT snapped pictures here and there of booths interesting to our readers. The best of those taken are reprinted in the montages shown on these pages. We offer blanket apologies to any who may have been left out, both for ourselves and our camera. Most of the booths and many of the individuals are easily recognizable. Somewhere in each picture the name of the exhibiting company is visible. Other informal photos were taken at the NPTA show (turn the page).





D. R. Dominie's

"LISTEN,
Mr. Traffic
Manager."



T HERE ARE PROBABLY AS MANY WAYS OF KEEPING RATES, tariffs, and routing charts as there are traffic managers. Some concerns, which ship quantities of many various items, are compelled to mantain their own tariff files which are similar to those carried by the carriers themselves. Other concerns, shipping mainly by parcel post and railway express, need only to have those simple guides supplied by the carrier to ascertain the rates to respective destinations. However, the majority of shippers fall in the classification of one or more synonimously classified items and it is in this group that the ways and means of maintaining proper rate charts are greatest.

It is definitely advisable for any shipper, regardless of how small or large, that he keep at his finger tips rates and routings for the benefit of sales and manufacturing departments.

Demand For Rate Analysis

We have found that there seems to be a constant demand by some departments for an analysis of respective rates and methods of shipping to various cities. This is particularly true when warehousing operations enter this is a picture. Sales is constantly being requested to supply rates, and is constantly being pressurized to reduce their transportation charges to the consignee by the consignee.

Because of this pressure put on sales, they in turn are quite adamant in their request to the shipping and traffic departments to route all shipments via the cheapest methods possible. In order to do this, a company which is shipping any quantity of orders must have some system of comparison readily available so that they can route orders very quickly and dispatch them as fast.

Rate Comparison System

The Polaroid Corporation has devised a system of establishing rates and rapid comparisons along the lines of a loose leaf notebook. This notebook is tabbed according to states, and secondly, cities within the states. The following example is a typical illustration of how

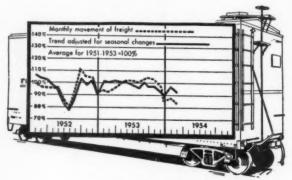
this system is worked. In this particular illustration, the city of Chicago and the state of Illinois are used. Each notebook is made for a particular commodity, and therefore shows only the rate applying to that commodity. The book is prefaced by special instructions which apply to various carriers and cities. All pertinent

(Continued on Page 29)

Carloadings For Second Quarter Expected To Drop Below '53 Mark

Freight carloadings in the second quarter of 1954 are expected to be 7.6 per cent below the same period of 1953, according to estimates just compiled by the 13 regional Shippers Advisory Boards and made public recently.

On the basis of those estimates, freight carloadings of the 32 principal commodity groups will be 7,188,-765 cars in the second quarter of 1954, compared with 7,779,006 actual carloadings for the same commodi-



Graph Courtesy LaSalle Extension University

ties in the corresponding period in 1953. Of the thirteen Shippers Advisory Boards, only one—the Pacific Northwest—estimated an increase while twelve estimated decreases in carloadings for the second quarter of 1954 compared with the same period of 1953.

Tabulation below shows actual carloadings for each district in the second quarter of 1953, the estimated carloadings for the second quarter of 1954, and percentages of changes.

9				
New England	113,861	111,016	2.5	dec.
Atlantic States	776,604	720,689	7.2	dec.
Allegheny	918,121	809,145	11.9	dec.
Ohio Valley	902,689	828,552	8.2	dec.
Southeast	1,057,150	1,036,759	1.9	dec.
Great Lakes	678,650	582,149	14.2	dec.
Central Western	228,175	197,435	13.5	dec.
Midwest	851,923	797,672	6.4	dec.
Northwest	734,359	638,217	13.1	dec.
Trans-Missouri-Kan	sas 351,949	342,665	2.6	dec.
Southwest	514,839	494,926	3.9	dec.
Pacific Coast	395,536	368,263	3.9	dec.
Pacific Northwest	255,150	261,277	2.4	inc.
TOTAL	7.779,006	7.188,765	7.6	dec.

Shipping And Packing Products Companies Exhibit At Paper Show



Left: Leslie E. James demonstrates new Better Packages electrically powered automatic gummed tape dispenser.

The 51st Annual Convention of The National Paper Trade Association held at the Waldorf Astoria during the latter part of March contained a number of exhibits of gummed sealing tape, packing materials, and other products useful in shipping and packing. Staff photographers caught the shots on this page while passing through.



Left: Industrial Tape Printers new model machine, used for printing pressure-sensitive tapes. Below: Bill Shee, Sales Manager, Derby Sealers, Inc., looks down at one of his company's new line of lever-operated automatic gummed tape dispensers.

Below: An interior packing roll demonstrated at the Greenwood Packaging booth.



An official of Shelton Manufacturing Company, Inc. looks at the "schoolroom" with its students made of Shelton's cor-







General Gummed Products, Inc. booth.
Front. L to R: Bruno Strauss, George
Kahn. Rear. L to R: Fred Rothschild,
Secretary of the firm, John Daley, Jr. of
Prime Paper Corp., and Otto N. Weil,
President, General Gummed Products.



Model Jean Thompson demonstrates one of Better Packages' gummed tape dispensers.



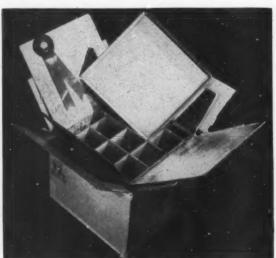
Henry B. Katz, President, Greenwood Packaging Supply Company, points to a small segment of his extensive exhibit of molded foam rubber cushioning, reusable containers, rubberized fibre cushioning and other packaging products.

1954 Fibre Box Competition

Demonstrates New Designs In Solid and Corrugated Containers

L dosign and development of corrugated and solid fibre boxes and boards were on public view last month at the 1954 Fibre Box Competition and Exhibit. In addition to showing the newest improvements, the competition's purposes were to stimulate the development of uses for these products in new fields, to further their use in established fields, and to give recognition to member companies for the service they have rendered to the industry.

Announcement of award winners was made at the Spring Meeting of the Fibre Box Association at the



An Honorable Mention Award in the Inner Packing and Inner Containers Class went to a container made by Fibre Board Container Corp.—Robert Gair Co., Inc., New York for the American Red Cross. Designed to preserve pints of whole human blood in shipment and during use in the field, this box's principal feature is the foil laminated liner which serves as an insulating medium maintaining low temperature to preserve the blood. The interior packing maintains a necessary distance between the bottles and the foil and also insures against breakage. The outer container is made from weatherproof board to protect the interior.

Edgewater Beach Hotel, by Clarence F. Smith, Fi:st Vice President, Inland Container Corp., Indianapolis, and Chairman of the Box Competition and Exhibit Committee. First, Second and Honorable Mention certificates of award were given to the twenty-six manufacturers submitting the winning entries. Duplicate certificates were awarded to the companies for whom the containers and packaging were made.

Judging by a board of five judges was based on four

points: 1. Whether the development was a new use or conversion; 2. The potential market; 2. Technical superiority; and 4. Practicability of usage.

Judges Rate 311 Entries

The judges included: C. V. Nelson, Director of Purchases, General Mills, Inc. Minneapolis; W. B. Keefe, Director of Package Engineering, Westinghouse Electric Company, Mansfield, Ohio; A. V. Grundy, Director Container Laboratories, Quartermaster Food & Container Institute, Chicago; L. W. North, Member Official Classification Committee, New York City; H. J. Betiendorf, President and Editorial Director, Board Products Publishing Co., Chicago.

311 entries reflecting the very latest advances in design, construction and low cost package were submitted by forty-one manufacturers throughout the United States. First prize in the Articles made from corrugated or solid fibreboard division went to the Robert Gair Co., Inc., of New York.

General Service Organization

The Association was organized in 1940 as a general service organization serving corrugated and solid fibre box manufacturers. Among its many functions, the Association: Promotes the general welfare of solid fibre and corrugated manufacturers; Promotes and developes the market for corrugated and solid fibre-board; Cooperates in maintaining a high standard of quality in the products of box manufacturers; Collects and disseminates statistical data; Cooperates with transportation committees in maintaining equitable traffic regulatons.

During 1953, 6,295,600 tons of corrugated and solid fibre boxes were produced in the United States, their shipments representing a dollar volume of \$1,313,495,600. Over 51% of the fibreboard produced in this country last year was used in the manufacture of corrugated and solid fibre boxes.

Encompass Country's Industry

The end uses to which these boxes and containers are put encompass all of America's industry. Based on 1952 shipments, 33.3% of all fibreboard boxes are used

(Continued on Page 28)

NEW PRODUCTS



& LITERATURE

ELECTRIC TAPE DISPENSER

A new automatic, electric tape machine which is said to cut costs through savings in time and tape, and which minimizes operator fatigue, has been developed by the Ideal Stencil Machine Company. The Ideal 200E Electric Clip-A-Tape cuts tape to any



length from 3 to 105 inches, moistens and delivers it, at the touch of a button. All widths of standard or reinforced gummed tape from "1 to 4" can be used. Its simple operation makes it possible for two workers to use the machine at the same time with a minimum of effort, greatly increasing the production potential of each machine.

Special features include an exclusive tape weight swivel that eliminates jamming, a thermostatically controlled water heating unit, and self-sharpening, toolsteel blades. No special tools are needed for ceaning the 200E. Parts ordinarily subject to rust and corrosion are of stainless steel.

The simple, rugged construction of the machine, which is 12" high, 12" wide and 20" long, enabled it to perform trouble free through exhaustive "onthe-job" tests.

ELECTRIC WAX HEATING TANKS

D. C. Cooper Co. announces a complete line of New Electric Wax Heating Tanks, approved by Underwriters Laboratories for safely and accurately heating wax, rust preventives, oil, grease and similar compounds.

Electric heating elements are so placed as to prevent exposure to liquids, giving longer life and more efficient and even temperature throughout, without scorching or overheating of compounds. The company's approved Electric Tanks are heavily insulated for economy of operation and protection of the operator.

Automatic thermostat control and 3"

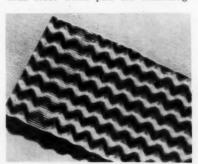
dial stainless steel stem thermometer assures accurate temperature control, preventing overheating and scorching of compound.

An automatic fusible closing device is attached to the cover to hold cover open when in use and automatically close in case of fire.

The firm's line of approved electric tanks are furnished in sizes ranging from 5 to 1000 gallons, and can be equipped with special automatic timers. All tanks have U/L label.

SINGLE SHEET CUSHIONING

A new new single-sheet cushioning material which, according to the manufacturer, gives greater protection per cost than any other sheet now on the market, has been developed by Sherman Paper Products Corporation. The new sheet, called "Sherm-A-Pak", is formed by combining tremendous pressure and temperature to forge the fibres of the sheet into a tough permanent, cushioning crimp. The tremendous force which puts the cushioning



into the fibre keeps the fibres "live", unlike other molded, indented or embossed sheets now on the market, the company explains.

The "live cushioning" forced into the fibres result in greater resiliency in a single-sheet cushioner than ever before it is claimed. The sheets give continued protection to fragile items over long transportation hauls in dry or damp weather, where other singlesheet cushioners would fatigue. The extra height of the sheet's cushioning

Literature and prices of products mentioned can be obtained if you drop a post card to News Editor, SHIPPING MANAGE-MENT, 425 Fourth Ave., New York 16, N. Y.

Companies having new product stories should send them to the same address.

gives more protection against heavy impacts.

The product is available in virgin and processed kraft, in a variety of weights. The sheet may be had in rolls, sheets or special die-cuts for custom packaging.

FORK LIFT BROCHURE

Three models of the "Dynamotive," gas fork lift truck with electric transmissions, are described in a new four-color brochure published by the Automatic Transportation Company.

Complete specifications are given for 4, 5, and 6,000-pound capacity models of the line, which feature an electric, infinite step transmission. This eliminates the need for torque converters, overdrive mechanisms, and gear shifting, thereby reducing the "down time" faults of ordinary gas trucks, the manufacturers state.

IMPROVED BALE CUP

Safety factors in long-distance shipping of textile merchandise have been enlarged in a new telescoping bale cup perfected by the Chase Bag Company. Goods are securely packed in the lower portion of the waterproof, pilfer-proof cup, and the slightly large top section telescopes over the bottom to form a double protective wall. For better product identification, the manufacturer will print orders with the customer's own label or trademark in an attractive 2-color design.

The cups are made of quality burlap and crinkled paper. A variety of adhesives are available to meet customer requirements. Cups arrive flat,



to conserve storage space, and low temperature adhesives permit quick opening. Finished bales are compact, easy to store and handle, neat in appearance. The cups are especially designed for use in baling presses but

(Continued on Page 23)

Package Engineer Activities

U.S., Canadian Package Experts Head For Ontario Conference

Around 400 Canadian and U. S. packaging and production authorities will converge on Niagara Falls, Ont., this month to study in detail the newest trends and developments in packaging machinery. The event marks the third annual Ontario Regional Conference of Packaging Association of Canada, to be held at the Sheraton-Brock Hotel. The Ontario conference is second in size only to the PAC annual meeting and exposition.

According to S. C. Torno, general conference chairman and vice-president of Danforth Wines Ltd., Toronto, "the program for the 1954 Ontario Regional Conference has been built around packaging machinery. The theme will cover the economics of packaging from design and engineering through packaging machinery to handling and shipping.

Advances In Past Decade

"Too few Canadians realize the tremendous strides which have been taken in the packaging machinery field over the past decade", Mr. Torno stated, "with the result that much of the equipment in use in Canadian plants today is out-moded. In fact, this is rapidly becoming a serious problem in production costing. The objective of the one-day conference is to show manufacturers how they can get the most out of their packaging machinery and at the same time decrease production costs".

A featured speaker will be John A. Warren, packaging consultant, American Home Products Ltd., New York. One of the outstanding consultants in the U. S., Mr. Warren is also vice-president in charge of the American Management Association's Packaging Division.

Package Engineering Forum

Highlight of the session will be a panel forum covering the various aspects of package engineering and packaging machinery. Speakers will include: Leonard Wheeler, packaging consultant of Toronto and Los Angeles, who will talk on design; M. J. Collins, of Canadian General Electric Co. Ltd., Toronto, who will talk on container engineering; Bernard R. Markell of Delamere & Williams Co. Ltd., Toronto, who will talk on packaging machinery development in Canada; K. Henderson of H. C. Burton & Co., Hamilton, who will talk on handling and shipping.

The panel discussion will include remarks by a secondary panel of users' representatives under the chairmanship of J. A. Whitten, Christie, Brown & Co. Ltd., and a question and answer period, for the delegates.

Philadelphia SIPMHE Group Sees Film On Metal Containers

A recent meeting of the Philadelphia Chapter of Society of Industrial Packaging Engineers featured the showing of a color movie film produced by the Container Division of Rheem Manufacturing Co.

Mr. J. R. Weaver Jr., Chief Project Engineer acted as narrator and answered questions as the showing of the film progressed. The film covered the development, testing and production of large re-usable metal containers. Typical prototype containers included those utilized for packaging and storage of such items as turbo-prop and turbo jet engines, and the Nike Missile.

Seminar Will Discuss Problems At Western Packaging Show

The broadest approach to packaging and materials handling problems will be made in a new type of industrial seminar to be introduced concurrently with the Fifth Western Packaging and Materials Handling Exposition in San Francisco's Civic Auditorium, August 17 through 19.

Moderated by an internationally recognized industrial expert, Professor Samuel Rubin, head of the University of Southern California's Transportation Department, the conference will include top representatives from broad segments of industry.

In closed sessions, they will consider packaging and materials handling not only from the standpoint of pro(Continued on Page 22)

Moisture Control System To Be Used On Export Packages

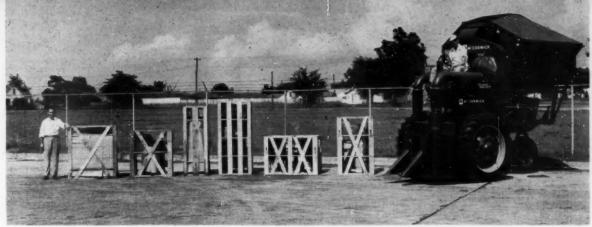
Employees of Terminal Trucking Co., Packaging Contractor, New York District Engineer, Corps of Engineers, attended an instruction meeting on how to



Mr. Wright Reiniger (right) demonstrates method of installing sensing element within the barrier material of sealed packages to Mr. Harlon A. Harvey. South Street Terminal Corp., (left) and Lt. Col. E. J. Wiltrakis, representative for the District Engineer, New York, Corp of Engineers, U. S. Army.

install and use the American Instrument Co's Hydrotector system in sealed Method II military packs.

The Hydrotector system will be used in all export packages of the New York Engineer District. Purpose (Continued on Page 24)



Line-up of wirebound crates in illustration above shows the versatility of shapes and uses for this type of container. On the far right is a completely assembled mechanical picker, ready to pluck the bolls from cotton plants. The six crates contained most of the picker's component parts when it is knocked down and packed for shipping.

Some Fundamental Principles of Solid Container Design

By NICHOLAS L. RIPICH

American Tank & Fabricating Co.

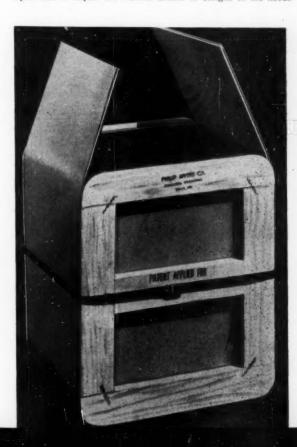
In the article which follows Mr. Ripich covers nailed wood boxes, wire bound boxes, and crates—open and sheathed; their style and their uses; types of closures; and writing the specification.

WELL ESTABLISHED PRINCIPLES of efficient box and crate design are the result of the correction of troubles experienced in actual service and container testing laboratories. The first recorded laboratory tests for improvement of shipping containers were made in 1905 by the Forest Service in cooperation with Purdue University at Lafayette, Indiana. The purpose of these tests was to determine the merits of different kinds of wood as box material. And these early investigations demonstrated that details of construction have far greater influence on strength of a box than the species of wood used. Research was later conducted at the Forest Products Laboratory at Madison, Wisconsin, in 1910 where special testing machines and methods of testing have been developed. The chief endeavor of the laboratory, in connection with shipping containers, has been to develop the fundamental principles of design and the relationships of the various details necessary to produce containers which are balanced in strength. Container testing laboratories patterned after that of Forest Products Laboratory have been

-Photo Courtesy U. S. Plywood Co.

One of the materials for shipping container construction is a laminated panel made of a sturdy hardwood core to both sides of which are resin-bonded tough sheets of Cylinder Kraft Paper. Lightweight, strong, flexible and inexpensive, this material is highly economical for shipping container construction. The container on the right was manufactured by Philip Myers Company, Texas, Maryland.

Delivered at the Packaging and Materials Handling Short Course produced by the Society of Industrial Packaging and Materials Handling Engineers under the sponsorship of the Mechanical Engineering Department, Massachusetts Institute of Technology, Boston, Mass., October 19-22, 1953. established by the several segments of industry. The chief function of these laboratories is to apply the fundamental principles and to adjust the various details of designs to the needs.



of the individual shipper. Cooperation of carriers and other agencies have resulted in better practices which have led to the recognition of the United States as the foremost country in the development of shipping containers.

The best container for your services is one which will deliver the product satisfactorily to the ultimate consumer at the minimum of total cost. Its design is subject to the varying conditions of cost, value to the product, degree of protection required, method of packaging, transportation hazards to be encountered, inconvenience and embarrassment of making replacements, and facilities for handling and transporting.

Strength In Balance

A balanced container is one in which each part has strength in balance with that of any other part and the balancing of construction depends upon the hazards to which the package is subjected. A container whose construction is so balanced that under one set of conditions one kind of failure is just as likely to occur as another may under other conditions be subject to but a single kind of failure.

A container which will deliver every package undamaged may he inconsistent with minimum total cost, since the ideal container would always be so light and fragile that occasional accidental rough usage would cause a slight amount of damage. It should be borne in mind, however, that the economic loss resulting from delay, loss of good will, and the cost of making settlements is always greater than indicated by claims filed against the carriers. It must be recognized that all losses are reflected in the ultimate cost of the product to the consumer. Consideration of the nature of the product and the economic factors involved leads to the conclusion that there can be no fixed standards of serviceability or fixed rules of design for containers. Some general principles and rules have been worked out and may be used to advantage in designing an original container or in correcting difficulties experienced in service. However, it is impossible to make definite rules for designating containers which will have just sufficient strength to deliver the product without damage. The study of failures and damage experienced in service would usually reveal the nature of the stress and suggest the principles to apply. In some instances the cause of damage will be apparent but in others neither the container nor packing may show evidence of failure-yet the character of the damage to the product may reveal that the stress resulted from such causes as the sides of the container springing in, diagonal distortion, twisting of the container, or the use of too rigid packing material. It may even disclose an inherent weakness in the design of the product itself.

In the selection of a lumber for container materials, all pieces should be made of well seasoned lumber. Moisture content should not exceed 18% of the oven dry weight. The piece used for construction of the container should show no defects that materially weaken the container or will interfere with prescribed nailing. Boards containing knots whose width is greater than 1/3 the width of the board should not be used. Excessive

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NAILED BOXES.

Tests were made on canned-goods boxes by the Forest Products Laboratory to determine the relative durability of boxes under variation in moisture conditions. The results of those tests are shown in graph above. All sketches on this page were made available by the Freight Loss and Damage Prevention Section of the Association of American Railroads. The large knot or knot hole would interfere with the nailing. Cut off the board on the dotted line.

Method of measuring the size of knots.

Bad cross grain. Not advisable to use.

cross grain in a board will materially affect the strength of the container and should be discarded.

As the joints are the weakest part of a container, it is imperative that correct fastening be employed. Most of the failures in containers have been attributed to improper fastening and to correct such a condition the following factors should be considered: kind of nails, size of nails, spacing of nails, and the nailing pattern. Other types of fasteners such as screws and staples may be used.

Commonly Used Nails

Many types of nails are available for assembling but those commonly used are bright and cement coated types. Data included in specifications and other publications is generally based on the use of cement coated nails except where clinching may be accomplished and bright nails are indicated for this purpose.

While the cement coated nail is superior to the bright nail in withdrawal resistance or nail-holding power, it has a disadvantage in that the cement coating will deteriorate a few months after nailing and the coating may rub off when driven into dense woods. Chemical etched nails have proven superior to the cement coated nail and can be produced by a simple etching procedure which is recommended by the Forest Products Laboratory. The following steps are suggested:

 Prepare a 10 per cent solution (by weight) of commercial monoammonium phosphate in water. Do not use metal container for preparing or storing solution. Keep solution near room temperature (about 68° F.).

Immerse nails in solution for about 7 hours, stirring occasionally. Five gallons of solution is sufficient to etch about 100 pounds of nails.

At end of etching period, remove nails and rinse with water.

4. Air dry nails, to prevent rusting.

In order to accomplish an efficient nailed joint in a container, it is, of course, important that proper nailing be practiced. Nails driven at an angle will affect the strength of the joint, and if the point of a nail protrudes on the outside of the box, it will cause injury to personnel, affect handling and stacking. If the point of the nail projects from the inner surface of the container, it may cause damage to the contents or injury to persons stowing the product.

Nailed Wooden Boxes

Nailed wood boxes are used in shipping articles covering a wide range of sizes, shapes, and weights. Products up to 1,000 lbs. in weight can be safely transported in nailed wood boxes of the correct design and construction. All products designated for shipment in nailed wood boxes fall into one of three categories: namely, easy, average, or difficult loads, also referred to as type 1, 2, and 3 loads.

(Continued on Page 26)

GOVERNMENT PERSONALITIES

* NEWS REVIEW *

ASSOCIATIONS

COMPANIES

R. F. ALEXANDER, SR., 54, WAS SHIPPING ROOM EQUIP. PIONEER

Robert F. Alexander, Sr., owner and operator of the W. H. Alexander Co.,



R. F. ALEXANDER, SR.

New York and Philadelphia, died last month at his home in Newton Square, Pa. He was 54 years old.

Under 35 years of Mr. Alexander's guidance, his company became one of the leaders in the Shipping Dept. Equipment field in the East. He was also president of the Ideal Stencil Machine Co. of Belleville, Ill. Mr. Alexander pioneered many of the innovations that have become standard items and practice in modern shipping departments.

S. R. BRIDGE, 48. EXECUTIVE OF BROWN-BRIDGE MILLS

Scott Robinson Bridge, 48, secretary and treasurer of Brown-Bridge Mills Inc., and a director of the First Troy



S. R. BRIDGE

National Bank and Trust company died late last month at Stouder Memorial

hospital Troy, O., after an illness of two months.

Mr. Bridge had been associated with the Brown-Bridge company since the firm's beginning in 1928. He completed 25 years with the company in 1953. He had been an officer and director of the company for 20 years. His work for the company comprised sales management, purchasing, and the company finances.

"C" MAN CAMPAIGN FEATURES CHASE BAG'S 107th BIRTHDAY

The Chase Bag Company, founded in 1847, will celebrate its' 107th anniversary with an unusual advertising campaign. Designed to encouraging packers to capitalize on the company's long experience, each ad in the series will feature the "C" Man, the capable Chase representative. By depicting important historical events in Industry, Agriculture and Commerce, the entire campaign conveys dramatic visual evidence of the firm's vast experience.

The basic aim of this program, the company revealed, is to supply all packaging users with expert technical advice in all phases of packaging. Every Chase representative will initiate an agressive program to acquaint all packaging users on the latest materials, the most modern applications, the most efficient solutions for all packaging problems.

WIREBOUND CONTAINER INDUSTRY SET DOLLAR VOLUME RECORD IN '53

The wirebound shipping container industry set new high records in 1953 for both dollar volume of business and the numbers of containers it produced and sold, according to the Wirebound Box Manufacturers Association's statistical review for the year, which was presented at the association's annual meeting at Belleair, Fla. The study revealed that the industry's dollar volume for 1953 was \$111,260,363 and its unit production was 186,367,262 wirebound boxes and crates.

The dollar volume was 3.3 percent over that of 1952 and the unit volume was 6.6 percent greater than the previous year.

A round table discussion of current business conditions and future prospects

Manufacturers and distributors of shipping and packing equipment, traffic schools operated nationally, and others with products of interest to our readers are cordially invited to submit items to the News Review Department. Attention, Mr. Alfred Zeff, News Editor. disclosed a noticeable slump the first two months of 1954, but decided optimism for business in the months just ahead. The statistical review was pre-



N. A. FOWLER

sented by L. S. Beale, secretary of the association.

Neil A. Fowler, vice-president of the General Box Co., Des Plaines, Ill., was elected president of the association by the directors to succeed J. A. Sowell of the T. R. Miller Mill Co., Brewton, Ala., who had served two terms. Sowell was elected vice-president.

PHILIP O. DEITSCH ANNOUNCES NEW EXECUTIVE APPOINTMENT

Following a special meeting held in Columbus, Ohio, recently, the Optical Wholesalers National Association Board of Directors announces that William M. Tellefsen, Secretary-Manager, has ac-



W. M. TELLEFSEN

cepted an executive position with Philip O. Deitsch, Administrative Officer of four trade associations in the paper converting field.

Mr. Tellefsen has been associated with (Continued on Page 23)

24,000 Visitors Set Mark

(Continued from Page 11)

Paper packages are expanding into new fields, it appeared, as a result of development of protective plastic coatings. A Geon vinyl plastic developed by B. F. Goodrich Chemical Company is being applied to fiber containers in which guided missile units are shipped to overseas installations; the exterior coating is said to provide complete waterproof protection.

Trends in glass containers included lighter weight and simpler shapes--for application to high-speed production lines-- and increased use of fired glass-on-glass colored labels, which don't rub off. Fiberglass is being used as a shock-absorbent cushioning material in packages and for such cushioning jobs as the crash pad automobile dishboard liner.

Manufacturers of packaging machinery will do a record business this year and next, Robert T. Fore-

Firm Sets Up "Lab On Wheels" For Package, Shipping Study

A new "Laboratory on Wheels", developed by Brainard Steel Division, will help make perfect shipping a reality. Company field engineers will use the experimental car for testing different methods of steel-strapping and bracing crates, bundles, packaged goods, etc., to insure safe transit. The car will be operated on the



This experimental railroad car was developed to test different methods of loading to insure safe transit. It will also be used as a classroom for salesmen and field engineers to receive refresher courses in the most up-to-date shipping practices.

company's private tracks at its main plant in Warren, Ohio, where actual operating conditions can be simulated. According to Frank Houck, Manager of Brainard Strapping Sales, unique problems are often presented by shippers, and the experimental car will help solve special requirements. With reduced loss and damage claims, the nation's railroads will also benefit.

The car will augment the extensive training facilities maintained by the company for its strapping salesmen and field engineers. Not only new trainees but veterans in steel strapping will be brought in for periodic refresher courses in the most up-to-date shiping practices.

man, director of sales of R. A. Jones & Company, and and president of the Packaging Machinery Manufacturers Institute, predicted at the show. Many machinery manufacturers are operating at higher levels than in any postwar year, and order backlogs also are at a new high. Shipments should be 11 per cent higher this year than 1950-53, and the resulting carryover into 1955 should insure good business for that year as well.

April Date Set For 1955

Dates of the 1955 exposition were set as April 18-21 at a meeting of the Exhibitors' Advisory Committee last night. Next year the show will be held in the International Amphitheater in Chicago. The exposition policy of alternating the location between the Midwest and the East was reaffirmed at the meeting. As a result the show will return to Atlantic City in 1956.

This year's Monday-Thursday schedule will be continued next year. However, the time for the Exposition to be open will be extended to 32 hours. In Chicago next year hours will be as follows: Monday, April 18, 10 a.m. to 6 p.m.; Tuesday, April 19, 10 a.m. to 9 p.m.; Wednesday, April 20, 10 a.m. to 6 p.m.; and Thursday, April 21, 10 a.m. to 3 p.m.

Richard Wellbrock, vice president, New Jersey Machine Corporation, will head the Exhibitors' Advisory Committee which will plan the 1955 exposition. He was appointed to succeed Floyd L. Triggs, advertising manager, Reigel Paper Corporation, who has served in that post for the past two years.

Package Engineer Activities

(Continued from Page 18)

duction cost cutting and operating efficiency, but also long range development of administrative and engineering methods.

Study Problems Objectively

According to Professor Rubin, the problems of both large and small manufacturers can thus be attacked objectively. The pre-planned and limited attendance will bring to the discussion table extensions of ideas paralleled by methods and equipment represented at the show. Findings and recommendations of the experts will ultimately be directed to the specific industries involved for application or further research.

Professor Rubin is qualified as moderator of the conference by more than 35 years of practical experience combatting industrial administrative and engineering problems.

Professor Rubin organized USC's Transportation Department and introduced into the curriculum the required subject, "Modern Materials Handling"—one of the first courses on the subject to be carried by a university when initiated in 1946.

Packing A Punch

(Continued from Page 7)

were in this field. This year they numbered over a score, some with very large booths.

For the first time since the heaviest fighting days of World War II the Armed Forces had a special exhibit of Military Packaging Procedures and the standards maintained by all branches of the Services. The exhibit, which was gotten up on short notice, was an excellent one. It was serviced by topranking packaging experts in government service. Many of these, from the Chief of the civilian packaging experts attached to the Armed Forces, on down, were present at the exhibits. Shipping Management will devote a special arti-

cle to these exhibits shortly. The conduct and staging of the packaging seminars, always on a high professional level, was the best ever. Associated with the seminars were a large group of exhibits especially arranged by the American Management Association, books, pamphlets and courses available from the Association, Armed Forces Packaging activities, full-time and correspondence school courses available in packaging, and a large series of exhibits of Monsanto's packaging operations. The Monsanto exhibit tied in with the very important job done by that company in demonstrating its shipping and packaging technique at the seminar.

The AMA Show has become increasingly a most valuable educational and informative foregathering. No executive who would increase his value to his firm in the fields of shipping, traffic and packing, should miss it.

*

A few days ago the 1954 issue of "Better Shipping Manual," the companion volume of this monthly magazine. rolled off the presses. The theme this year can be summed up as "the long haul for the cold war," in short, preservation packaging, and packing for long term storage.

As usual, the Manual is a compendium of the finest articles and statements to have appeared in the last year on such diverse subjects as Shipping Department Efficiency, Packing & Sealing, Containers & Container Testing, Traffic Management, Pilferage & Theft Prevention, and Methods of Transportation. The charge for the profusely illustrated 100 odd page reference volume is a nominal \$3, and it may be obtained at the same address as Shipping Management.

News Review

(Continued from Page 21)

the O.W.N.A. for over an eight-year period, and has earned the respect of the optical industry and his own fellow trade association executives, being pre-

sently an officer of the Trade Association Executives in New York City.

Mr. Tellefsen has developed a series of statistical studies of optical wholesales operations in all significant fields which has given to the industry knowledge never available before. In announcing the appointment of Mr. Tellefsen to his staff, Mr. Deitsch stated that the addition of the talents of a man of Tellefsen's background would enable him to materially expand effec-tive services to the divisions of the Paper Industry.

HENRY HOWLETT JOINS GAIR CO. TO REPRESENT CONTAINER DIV.

Williamh T. May, Jr., president in charge of container operation at Robert Gair Company, Inc., New York, an-nounced that Henry J. Howlett has



H. J. HOWLETT

joined that company as a special representative for the container division.

Mr. Howlett was president of Container Laboratories, New York, consulting engineers, for five years, was secretary of American Management Association for thirteen years, and had been vice president of the Piggly Wiggly Corp., the forerunner of today's self serv.ce supermarkets.

GREENWOOD PACKAGING OPENS SALES DIVISION IN PHILA.

Henry B. Katz, president of Greenwood Packaging Supply Co., Newark, N.J., has announced the opening of a new division at 1420 Walnut St., Philadelphia, to be known as Greenwood Packaging of Philadelphia, Inc.

This division, which will be a sales office, will be headed by Mr. Bert Jacobson, who has just completed his second tour of duty with the Packaging Division at Wright-Patterson and by Miss Nina I. Harvey, who was formerly associated with the Modern Dunnage Co. of Philadelphia. Mr. Jacobson will handle all of the Greenwood Military Packaging items and Miss Harvey will concentrate on the molded foam rubber applications for military packaging.

NATIONAL CARLOADING OPENS NEW TERMINAL IN ATLANTA, GA.

Continuing to expand its newly established Southern Division which provides freight forwarding service between the South and the West Coast, National Carloading Corporation has announced the opening of a modern new terminal in Atlanta, Ga.

The new terminal, according to T. R. Hudd, president of the freight forwarding firm, will handle goods valued at millions. It was built for National Carloading Corporation by Southern Railway. This terminal links with the company's stations in the states of Alabama, Georgia, North and South Carolina, Tennessee and Florida and with the more than 150 terminals and offices the firm maintains throughout the United States

New Products

(Continued from Page 17)

are equally suitable for use without a baler.

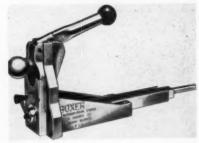
A waterproof lining "built in" the cup gives extra protection to goods during transit, according to textile finishers and printers. Its sturdy construction is ideal for export purposes, and insurance rates are reduced with this pilfer-proof package. For added safety, the telescoping bale when packed has no haphazard closure or exposed openings to cause loss or damage to

contents, or to encourage theft.
"Skirts" of the product are furnished in various standard depths to permit packing different sizes of goods, or the company will manufacture cups to individual specifications.

PORTABLE CARTON CLOSER

International Staple and Machine Company announces the availability of a new, improved, cast aluminum, port-"Boxer" model. Dimensions are x 7" x 4¹/₄". The entire unit able "Boxer" model. $16\frac{1}{2}$ " x 7" x $4\frac{1}{4}$ ". weighs only 5 lbs. 5 ozs.

Because of the model's light weight, the manufacturer states that girls can operate this portable stapler as eas'ly



as men. Stapling face on this new model is wider than previously to provide firmer contact with the carton before stapling.

Like all the firm's line of staplers, the unit operates on the retractable anvil principle, that permits stapling from the outside after the carton is filled.

The product meets Consolidated Freight Classification Rule #41 requirements as well as Post Office and

Moisture Control System

(Continued from Page 18)

of its use is to read moisture content within sealed packages without breaking the package. Used in this way, it warns of faulty packs before rust damage can occur to equipment which is about to be stored or shipped. Periodic readings are taken of stored equipment which can then be kept safely for long periods of time.

Key Element Is Cigarette Sized

The heart of the Hydrotector system is the cigarette size sensing element. It is installed in a package at the time it is made up—or can be inserted later. Special tools that can be used by any employee are used to install the sensing element in a matter of minutes.

The system works simply. A hole is cut in the barrier material, the sensing element is inserted and the opening sealed.

A high light in his demonstration was reached when he threw a sensing element thirty feet through the air to land on a cement floor, in order to dramatize its rugged qualities. The sensing element suffered no damage.

To get readings and determine the moisture content within a package, inspectors simply attach the leads of a portable indicator to exterior contact points on the sensing element. Moisture conditions are revealed on a numbered dial on the indicator. The dial is numbered from 1 to 10. Any reading above 1 is considered unsafe for long term storage. No charts, calibrations or calculations are required.

Package Standardization Helps Cut Cost, Lessen Breakage

Package standardization and simplification has enabled Gillinder Brothers, Port Jervis, New York, to reduce packing time 25%, save 25% in initial packing costs, and cut damage claims to less than 1%.

The company's time studies revealed that packing 22 different sizes of glass meter covers for shipment was a costly, time-consuming operation. Providing adequate protection for these fragile products posed a difficult problem since some packages receive handling at five different transfer points.

Unique Interior Packing

Package engineers recommended regular slotted corrugated boxes with unique interior packing pieces. The immediate result was a savings in initial packing costs, packing time, and a reduction in damage claims. Further reductions in inventory and warehouse space have been effected by reducing the number of box sizes from 24 to six.

With these new packaging methods, eighteen meter

covers can now be shipped in each corrugated box. Previously only 6 or 8 covers, depending upon the size, could be packed successfully in each master unit. In



Meter covers with protective liners are packed in master shipping unit. Nine meter covers are placed in bottom of corrugated box. A divider sheet is inserted and nine additional meter covers packed on top.

the company's packing department, the meter covers travel on a conveyor belt in groups of 36 units. Corrugated sleeves are slipped over the individual covers to provide cushioned protection and minimize breakage. Eighteen glass meter covers are then placed in a regular slotted box for shipment.

Corrugated Shipping Box Allows Savings In Weight And Cost

A corrugated shipping box, which weighs and costs approximately 50% less than the types of container it replaces, has been adopted by Norton Company, Wor-



Photos on this page Courtesy Hinde & Dauch

Packed and strapped to expendable pallets, new box rides upright, delivers contents in perfect condition. Easier to open, it can also be reused.

cester, Mass. In addition, it cuts packing time nearly 50%, and eliminates breakage.

The pallet box is used for shipping a wide variety of abrasive and refractory products to Norton warehouses and customers. Five to six are kept set up at all times to receive the various items as they come off the packing line. Measuring 40" x 40" x 20", the box is strapped, after packing, to an expendable pallet and rides upright in transportation.

MAKE THIS "ONE SWEEP" TEST YOURSELF!

See how BLUE RIBBON Gummed Tape Seals Faster . . . the first time down!



Stop-action photo proves Blue Ribbon seals with just one fast sweep of your packer's hands. Tests show an 18" carton center-strip is perma-sealed in 1.4 seconds.

Proof positive of Blue Ribbon's instant action.

Try this test yourself. We'll guarantee Blue Ribbon Super Standard sealing tape will close cartons and packages as fast as your operator's hands can move . . . and they are perma-sealed, ready to take the toughest stresses of all-condition shipping.

Figure the increased production you will get with a tape that goes down faster—users* report as much as 25% greater output...

stays down to last—with no rerubbing or resealing. Figure the savings you'll make, too.

You count on consistent good quality with Blue Ribbon . . . insured by 'pines to paper' control of the world's finest kraft . . . you get the same fine tape as you did on your last order—your next order—or a hundred orders after that!

*Names on Request

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Blue Ribbon Super Standard Gummed Tape is another Hudson Quality Product
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Duty Bags, Multiwall Sacks and Laminated Wrapping Papers.



Super Standard Tape





Gummed Tape Kraft Wrapping Paper Grocery Bags Multiwall Sacks

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Some Fundamentals

(Continued from Page 20)

Easy loads are those products having a low or a moderate density and are packed in one interior container which completely fills and generally adds rigidity to the container, or the contents themselves completely fill, support and add rigidity to the container. These are items which are not easily damaged by puncture or shock and do not shift within the container.

Examples of an easy load are: clothing, textiles, cartons, or cans packed in an inner container and ladings of similar nature.

Packed Directly Into Container

Average loads are moderately concentrated articles and are packed directly into the shipping container and provide support at several points on each face of the container.

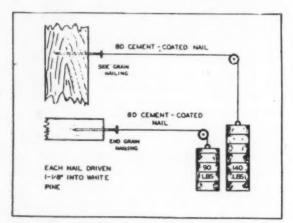
Examples of average loads are: hardware in cartons, liquids in metal cans, glass containers individually cushioned, and such items as kitchenware.

Difficult load items require a high degree of protection from puncture, shock, or distortion of exterior container or items which do not support the faces of that container.

Examples of difficult loads are: hardware in partially filled cartons, castings, machine parts, and other articles of irregular shape.

Seven standard styles of nailed wood boxes are in general use. They are styles 1, 2, $2\frac{1}{2}$, 3, 4, 5, and 6.

The nailed wood box affords a high degree of mechanical protection to its contents—it will support great super-imposed loads—can be readily fabricated by hand or with mechanical equipment—it is adaptable to complex blocking and bracing



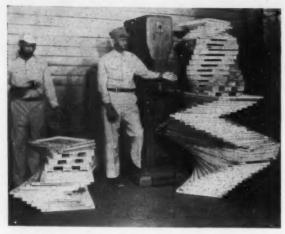
Comparative holding-power of nails driven in side grain and end grain.

which can be secured to 6 faces of the container—it has high resistance to crushing and puncture. The unfavorable features of the nailed wood box is the rather high tare weight—it is not water tight and has a tendency to warp unless proper nailing has been accomplished. The weight limitations usually prescribed for the several styles of boxes are: 60 lbs. for the style 1; 1,000 lbs. for the styles 2, 2½, and 3; 400 lbs. for the styles 4 and 5. The seven styles of nailed wood boxes are described below:

Style 1—the ends are made of one thickness of material without cleats. All nailing is done in a single line all around the container and the sides are fastened to the ends with end grain nailing.

Style 2 has two vertical and two horizontal cleats on each end. The top, bottom and sides are nailed to the ends and cleats. This pattern provides for some side grain nailing at each nailing edge. This style is easily handled because the cleats provide a hand hold.

Style 21/2. This box is similar to the Style 2 box with the



One hour production by hammer and nails vs. one hour production by an automatic nailing machine. The automatic nailing machine produced 4 times as many shooks as did the man with hammer.

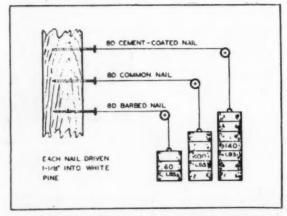
exception that the horizontal cleat is notched into the vertical cleat $\frac{1}{4}$ " to $\frac{3}{6}$ ".

Style 3 box. Similar to the Style 2 and 2½ nailed wood box with the exception that the four cleats are mitered jointed at 45°.

Style 4 nailed wood box has two exterior vertical cleats on each end. The cleats are always placed at right angles to the grain of the end panel, and are cut short 1/16" to 1/8" of the outside surface of the top and bottom. This permits shrinkage of the end boards and side boards without exposing cleats to damage. Staggered nailing is possible by nailing sides to ends and cleats. The tops and bottoms cover the sides and ends but fit between the cleats which keeps the box more rigid and is less susceptible to wracking.

Style 5 nailed wood box is considered similar to the style 4 box but having the two vertical cleats on each end secured to the inside of the box. The cleats may be either rectangular or triangular in cross section and should extend 1/6" to 1/8" from the inside surface of the top and bottom. This style box should only be used when the type of lading indicates this design.

Style 6 Box. Locked corner and dovetail construction in which the ends and sides of the box are joined by a series of glued tenons is more rigid than the nailed construction of the style 1 box. This style box has limited usage but is usually (Continued on Page 31)

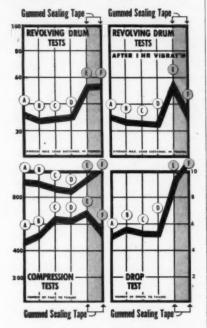


-Sketches on this page Courtesy Assn. of American Railroads

Comparative holding power of cement-coated, common, and barbed nails.

Gummed Sealing Tape Outperforms Other Closures In Impartial Tests

In order to determine the relative "shipability" of each of the six most widely used carton closure methods, an impartial testing laboratory recently undertook a series of performance tests. Each of the closure methods was applied to six different types of cartons. The cartons were then scientifically subjected to conditions simulating those actually met under rugged shipping conditions. The results of these tests are charted below. The tests proved conclusively that Gummed Sealing Tape is the closure best able to withstand shipping and storage strains—that Gummed Sealing Tape Ships Best.



The fact that Gummed Sealing Tape Ships Best is important to you-particularly important in view of the record of huge losses suffered by you and other shippers during the past five years. According to the Association of American Railroads, shipping losses in that period exceeded half a billion dollars. That is important money to save.

If you're not using Gummed Sealing Tape in your shipping department, you owe it to your company and to yourself to get the facts about these tests. Address the Gummed Industries Association, 11 West 42nd Street, New York 36, N. Y. for free booklet describing these impartial tests and to learn of the many advantages shippers derive from the use of Gummed Sealing Tape—the one form of closure that does so much for so little. Use the coupon at the bottom of the advertisement at the right side of this page.

TRAFFIC REPORTER

AROUND THE TRAFFIC WHIRL:

Atlanta, Ga.—The latest meeting of the Weighing and Research Service of the Southern Motor Carriers Rate Conference's joint Shipper-Carrier board was to have begun recently at the Dinkler Plaza Hotel. The subject "Claim Prevention" was the topic of the main speaker's address at the featured luncheon and the average claim ratio for 1952—released as 2.06—was to be brought under discussion. One of the main purposes of the meeting will be an effort to deduct that figure in 1954.

Worcester, Mass.—The Traffic Association's Sixth Ladies Night—featuring dinner and dancing—has been scheduled for this month.

New York — At the last regular monthly meeting of the New York University chapter of Delta Alpha Nu Fraternity, held at the Hotel Biltmore, George M. Schifferdecker, Assistant Traffic Manager of the Western Electric Co. of New York, spoke on "The Relationship of the Industrial Traffic Department to Business Administration."

Last month's meeting of the Metropolitan Traffic Association featured as guest speaker, Wally Snow of the N.Y. Central System. The Association also held its annual dinner at the Hotel Commodore in April.

Omicron (N.Y.) chapter of Delta Alpha Nu heard John K. Tennent, editor of Marine News, speak on the Merchant Marine Service at their last meeting, which was also marked by the nominations of new officers.

Los Angeles—Word comes from the city of Angels that the Los Angeles Traffic Managers Conference has changed its name to the Traffic Managers Conference of Southern California to better cover the scattered growth of industry in the Los Angeles area. The Conference has also increased the number of its directors from 12 to 15, including principal officers, so that a more varied scope of traffic matters can be included in their activities.

The LA Transportation Club's full social calendar continues apace with the holding of its annual stag dinner and golf tournament, Baseball Day to celebrate the opening of the Pacific Coast League's 1954 opening and motion picture industry day. Announcement has also been made that preparations are under way for the fourth annual Transportation Club tour to Mexico and a proposed air cruise to Hawaii—both of which are scheduled for October.



The front office will expect the best shipping record this month. And that's easy, this month and every month, with Gummed Sealing Tape because—

Gummed Sealing Tape
Guarantees Safest Transit



Gummed Sealing Tape

gives you — in addition to safe arrival of goods at destination:

free advertising space
ease of application
moisture resistance
lowered "damaged goods" claims
ready availability
neat, business-like packages



If you don't already use Gummed Sealing Tape, try it in May and prove it is the perfect closure for year-round closure satisfaction. Find out about "the one form of closure that does so much for so little." Mail the coupon today.

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Fibre Box Competition

(Continued from Page 16)

in the food industry; 9.8% for metal and metal products; 8.9% for paper and paper products; 7.2% for clothing, apparel and textiles; 6.6% for chemicals, drugs and soap; 6.3% for stone, clay and glass; 6.2% for furniture and household goods; 5.4% for electric goods; 4.1% for beverages; 2.0% for lumber and lumber products (excluding furniture); and 10.2% in miscellaneous industries.

Over 300 members of the association attended the two-day Spring Meeting.

New Freight Car Deliveries Show Rise Over Early Months

Deliveries of new domestic freight cars in March 1954 totaled 4,823 compared with 3,974 in February this year and 6,679 in March 1953, the Association of American Railroads and the American Railway Car Institute announced jointly.

The announcement added that orders for 348 freight cars were placed by the railroads in March. The backlog of cars on order as of April 1, 1954 was 20,966 compared with 25,441 on March 1 this year.

Mechanized MH Equipment Conserves Use Of Manpower

Incoming raw materials (glue, paper, cartons, wax, etc), at the Baltimore plant of Crown Cork & Seal Co. Inc., are unloaded from trucks on to pallets by a four-man gang, and routed via modern mechanized equipment to the "Spot" department on the fourth floor, a travel distance of some 200 yards, not including vertical elevator movement. Loads handled range up to 2,000 pounds.

Here some of the incoming materials are processed into spot crowns--regular crown corks with the addition of a scientifically selected spot material to prevent the liquid in the bottle from coming into actual contact with the cork disc assembled in the crown.

A round trip from the receiving department to the crown area takes one man 25 minutes. Formerly, using



WHATEVER THE JOB... LARGE OR SMALL ...

REDCURE **GUMMED TAPE** DOES IT BETTER

PAPER COMPANY MILWAUKEE 9, WISCONSIN

Branch offices CHICAGO, ILL. · COLUMBUS, OHIO PHILADELPHIA, PA. . FT. SMITH, ARK. . ATLANTA, GA. manually-operated four-wheel trucks, two men required 35 minutes for only a one-way trip. In addition, with two men pushing the manual truck, only two were



-Photo & Data Courtesy Automatic Transportation Co.

One man does the work of two, and in half the time, as incoming raw materials are now palletized and quickly moved into production using this electric industrial truck. Formerly, two men were required to manually push four-wheel trucks carrying materials such as this 32-carton, 2,080-lb. load. left at the unloading dock to continue palletizing incoming materials.

Now, while one worker alone handles the mechanical truck, three men continue to load pallets, thus speeding up the unloading operation.

"Listen Mr. Traffic Mgr. . . . "

(Continued from Page 14)

information is immediately available once the weight of the shipment in question is determined.

Special Data In Red

The cheapest rate at any given weight is indicated in red in this chart. For example, the five, ten, and twenty pound weights are listed in red under parcel post from twenty pounds on; the numbers in the "C" column which is freight forwarders are listed in red. The truck weight at one hundred pounds is also listed in red. This then indicates that from zero to twenty pounds, it is cheaper to ship via parcel post. From twenty pounds to the one hundred pound weight it is cheaper to ship via either truck or forwarder.

In many cases the name of the carrier which gives the best service is inserted on the sheet. In other cities there can be several carriers listed with an indication of their service.

Information In A Few Minutes

As one can tell from this chart, almost any information on shipments to a particular city can be given within a few minutes to a person or persons requesting them. In the notebooks which contain these charts, a map of the state is included for offline points.

The chart which we have demonstrated lists only







LOT LABELLING

Eliminate Shipping Labels . . . Print Direct!

Quick! Accurate! Easy! Print shipping information direct on cartons, boxes, packages. Eliminate double operation of preparing labels and then pasting them to the containers. Get 1,000 or more clear, sharp impressions from one stencil without re-inking. New FORM-CUT® Stencil has facsimile of your label or shipping form die-impressed into the stencil. Then type or write in address or identification data . . . attach to duplicator . . . and print, like using a rubberstamp. Write for Literature and FREE SAMPLE FORM-CUT STENCIL AND PRINT.

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Also for addressing shipping tags and labels . prints postcards, menus, forms, bulletins. 8 complete outfits: 89.50 to 899.50, including supplies (f.o.b. factory). At office or shipping room supply dealers.



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by Leslie A. Bryan

Director, Institute of Aviation University of Illinois, Urbana

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"NOBODY in traffic, packing and shipping can complete a study of this book without enhancing his knowledge of this rich and complex field and getting a clear idea of how to set about solving its problems," writes "Shipping Management" of TRAFFIC MANAGEMENT IN INDUSTRY.

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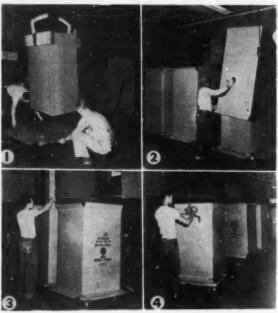
the "LCL" or "LTL" shipments. A second chart gives the comparison in carload or truck load rates to the same cities. When combined with the first, they give any one a complete picture of the rate structure and shipping costs to these particular points. Not only does it give this, but also the approximate delivery time.

System Gives Composite Picture

Although we do not necessarily recommend that a shipper follow our system, we feel that gives us a composite picture at a glance and that because of this, it is invaluable in shipping activities.

New Interior Corner Posts Reduce Damage From Handling

A reduction of damage in handling plus a saving of \$5,600 annually in material and labor costs . . . that's what a change in inner packing material accomplished



-Photos & Data Courtesy Union Bag & Paper Corp.

1. The air conditioner unit is raised and a pad and a scored corrugated sheet, which form the bottom of the box, are placed on the dolly. 2. The corrugated box is then slipped over the air conditioner unit. 3. Slit-scored corner posts made of double-faced honeycomb are then fitted into each of the four corners of the filled box. 4. Finally, the filled box is strapped closed.

for the General Electric Company of Bloomfield, New Jersey. These advantages result from the use of new interior corner posts, made of kraft paper in the form of a honeycomb, in their corrugated box shipments of air conditioner units.

Previously, General Electric wrapped and wired six ply corrugated strip pads around the top, bottom and center of each unit. To simplify this operation interior slit-scored corner posts made of double-faced honeycomb were developed. As illustrated, the packer fits these posts into each of the four corners of the filled box before it is closed.

Class I Railroads Install 239 New Locomotive Units

Class I railroads in the first two months of 1954 installed in service 238 new locomotive units, all of which were Diesel-electric, the Association of American Railroads announced recently. Of the total, 159 locomotive units were installed in January and 80 in February. In the first two months of 1953, they installed 329 locomotive units, of which all were Diesel-electric except for three steam.

Class I railroads on March 1, 1954, had 521 new locomotive units on order. These included 496 Diesel-electric units, 10 electric, and 15 gas turbine-electric. Class I railroads on March 1, 1953, had 1,069 new locomotive units on order, of which Diesel-electric totaled 1,028, steam 12, electric 10, and gas turbine-electric 19.

Some Fundamentals

(Continued from Page 26)

most efficient when the sides are of single piece stock and the ends of a slightly greater thickness than the sides.

The selection of the correct nailed wood box will be predicated on the type of load, the weight of the contents, the style of the box, and the group of the wood to be used in its construction. This data may be obtained from military publications and publications supplied by civilian agencies including the National Wooden Box Association.

Ship In Style 4 Box

Assuming we have an article weighing 350 lbs. which we have placed in the type 3 (difficult load) category. Shipment of this article will be made in a style 4 nailed wood box constructed of Southern Yellow Pine which is a Group 2 wood. The minimum thickness of the sides, tops and bottoms shall be 34", box ends shall be a minimum of 1 1/16" while the cleats will be 1 1/16" thick by 3½" wide. Nails of 9 penny size shall be used for nailing sides, tops, and bottoms to ends and cleats. If Group 1 wood were used for the fabrication of the above container, dimensions of the lumber will be the same, however, nailing would be done with 10 penny nails. The nails to be used are the cement coated type. The cleats would be secured to the ends with bright nails sufficiently long to clinch at least ½8".

After the box has been properly packed and closed, the prescribed identification of the contents should be afforded in a weather proof manner and, if steel strapping is indicated, it should be applied as recommended by the strap manufacturer.

Wire Bound Boxes

The wire bound box is a light weight shipping container, the sides, top, and bottom of which are stapled to several steel binding wires and fastened to a framework of cleats at each end by staples driven astride end binding wires, the end boards being nailed or stapled to the cleat ends. The box is closed by joining securely the ends of each binding wire.

The construction of a wire bound box offers certain inherent advantages. It has a very low ratio of tare weight to load carried, it is quickly assembled with a minimum amount of labor, it is mass produced therefore relatively inexpensive, it requires a small amount of storage space as it is shipped knocked down to occupy a minimum amount of space.

Wire bound boxes are engineered and designed to carry specific loads and products. The thickness of the material, the number and gauge of wires, and the size of cleats can vary to do a specific job. Wire bound containers are furnished as

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FASTER! With its zip-zip compound leverage action, Hansen saves time in all types of tacking and fastening. Fast, easy one-hand operation. Tacks fast as you grip. Leaves one hand free.

BETTER! Balanced design insures accurate, precision driving. Powerful action drives each staple firmly and neatly in place for improved quality and increased holding power. It is adaptable to a wide variety of uses — screens, insulation, TV wires, etc.

AT LESS COST! Honsen saves time, steps and materials — operates faster — saves back-tracking — ready for instant, continual use.

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boxes, crates and pallet boxes, and can be made to carry loads up to 5,000 lbs.

Wood used in wire bound boxes is that of the four groups which are used in the fabrication of nailed wood boxes. face boards of a wire bound box can be made from any of the container wood groups but are usually made from Groups III and IV. They are made from a sawed lumber, veneer, or plywood. Cleats which form the framework of the wire bound box have joints which are mitered or mortised and tenoned. All wire bound boxes have four cleats on each end regardless of the box style. Wire bound boxes are furnished in four general styles, namely 1, 2, 2A, and 3. These styles differ primarily in the manner of closure of the wire. Style 1 has a twisted wire closure; Style 2 has a looped wire closure; Style 2A has a twisted wire closure; and Style 3 has a looped wire closure and has the ends reinforced with wire loops instead of battens. When necessary because of weight, size of container, or type of load, extra rows of cleats and battens may be added for rein-

The use of wire bound containers to carry a product should be discussed with representatives of the Wirebound Box Industry to obtain a container engineered for the specific application.

Nailed Wood Crates

Crates are structures in which the frame members sustain the load and define the shape. They are specially engineered containers which are designed to furnish protection in shipment and storage of large, heavy and fragile items and may be open or sheathed with lumber or plywood. They can be made reusable and demountable.

Crates are designed to protect the contents against damage caused by handling, storage, transportation, and weather. Because of the usually large size and weight of a crate, the damaging forces are much larger than those found in other containers. Damage can be caused by distortion, crushing caused by grabhooks or slings, and crushing by the improper use of materials handling equipment such as bulldozers or lift trucks.

Unless material used in the fabrication of a crate is of the prescribed quality, failure is likely to occur. All lumber used should be sound, the moisture content of which should be between 12% and 18%; any knots in skid and frame members should not exceed ½ the width of the members, knots in sheathing should not exceed 1/3 the width of the board. Prescribed nailing practice must be adhered to. When nailing flat faces of boards together which have a combined thickness of 3 inches or less, nails should be clinched preferably across the grain. All unclinched nails should be chemically etched or cement coated.

The maximum size and weight of a crate is limited by transportation and handling facilities. In the construction of a crate it is necessary to know the weight, dimensions, and fragility of the item to be packed. It is also well to know the possibilities of disassembly of a product as partial disassembly can result in a smaller container. The crate must be designed to accommodate blocking and bracing necessary to secure the article packed, and to avoid a concentration of load upon the container or the product.

Unsheathed Crates

The unsheathed or open crate is utilized when partial physical protection is required and to facilitate handling and storage of a product. The outstanding characteristics of the construction of an unsheathed crate is its great resistance to crushing and mashing at the corners and, when properly braced, high rigidity and high resistance to rough handling. It is easy to handle, easy to manufacture, and the strength and rigidity may be readily adjusted to different requirements by varying the details of construction.

The edge members form the foundation upon which the rest of the crate is built. They must be of sufficient size and strength to permit adequate fastening of the various parts and to support loads and shocks encountered in storage and transit. The corners are usually the weakest part of any crate; end grain nailing is very inefficient because of low nail holding power. The crate should be fabricated using corner construction known as 3-way corner, the distinguishing feature of which is that each member is held by nails or bolts in two directions and no end grain nailing is necessary. In order to obtain rigidity in crate construction, some kind of bracing across the faces is usually

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necessary. Laboratory tests have shown that the most effective bracing for open crates is diagonal bracing on the six sides. This type of bracing is much more effective in adding rigidity to the crate and requires a minimum amount of lumber.

Sheathed Crates

A sheathed crate is essentially a box beam. The sheathing when properly applied contributes additional strength and provides resistance to puncture and reduces weather damage to the product. The crate bases are normally of the skid or sill type. The base to be used should be determined by consideration of the cubage, center of gravity, and possibilities of supporting and securing the contents. The skid base has supporting members running the length of the crate under the floor boards. This base is particularly adaptable for articles that have their weight distributed over much of the base.

The sides, ends, bases and tops are ordinarily fabricated as individual units which are assembled to form the crate, which develops its ultimate design strength and rigidity when com-

pletely assembled and securely joined.

All crates must be provided with adequate ventilation and drainage. Ventilation holes should be provided in the upper portions of the crates. Drainage openings should be provided in the base by either drilling clusters of holes in several places or by spacing of the floor boards.

Side and end panels are usually a combination of vertical, horizontal, and diagonal members either with or without sheathing. The diagonal members materially increase the rigidity of the crate panels, and for maximum efficiency should be applied so as to form an angle of approximately 45° from the horizontal.

In order to afford weather-proofness to the contents of the crate, waterproof barrier material should be used as a liner which is inserted between the sheathing and the inner members

of each panel of the sides and ends.

Crate tops are fabricated with either lumber or plywood and may be single or double sheathed. The single sheathed top is constructed from plywood or tongue and grooved lumber laid crosswire on the crate. Waterproofing may be accomplished by the application of a bituminous top coating material. The sheathed top employs two layers of lumber sheathing with a waterproof material placed between the layers. The crate panels are assembled by the use of nails, bolts, lag screws, and strapping.

Reusable crates may be open type or a sheathed type and are designed with fasteners which allow for easy disassembly and reassembly. These crates provide for reshipment and easy

access for inspection.

Writing the Specification

The nature of a product to be packed is a fundamental consideration in the designing of a container. The protection needed varies from the mere holding together of a number of items such as bolts and nuts to the elaborate protection of delicate electronic equipment or heavy machine tools. Some products have highly polished surfaces, some have slender legs or other projecting and fragile parts, some have heavy parts supported by relatively weak parts.

It is evident that each commodity presents its own problem and consequently neither weight, nor distance traveled, nor method of shipment taken alone concentrates an accurate cri-

terion for designing a container.

In the preparation of the specification, it is necessary to know the size and weight distribution of the product, the method of preservation used and the degree of protection required, the possibility of disassembly, and blocking and bracing needed. Availability of container material will be considered in writing the specification.

After the necessary facts have been obtained, the specification is prepared and should include an illustration of the product to

be packed with all necessary dimensions thereof.

A bill of material should be given showing the groups of wood, the sizes of lumber, the size of fasteners, the nailing schedule, weatherproofing, kind of closure, and reinforcing, and all necessary identification and markings.

It is advisable to obtain copies of publications available from the military and industry which will cover in detail all the necessary information required for producing a solid container which will effectively do the job of carrying an article to the ultimate consumer in good order.





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